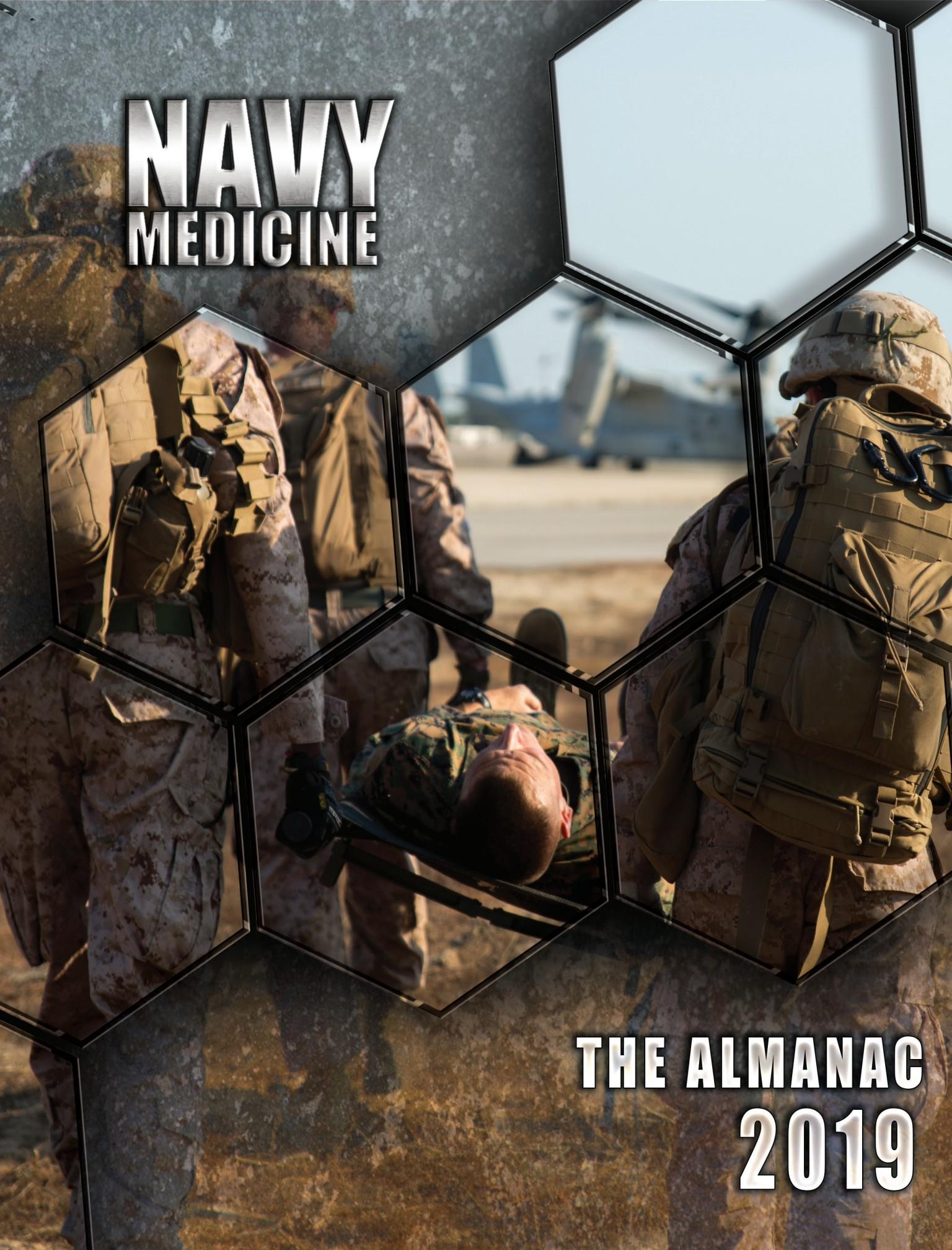


# NAVY MEDICINE



THE ALMANAC  
**2019**



# STRONG AS THE SEA THAT MADE US.

AMERICA'S  
**NAVY**  
FORGED BY THE SEA

47.565° N, -122.6269° W  
U.S. 7TH & 3RD FLEET  
FLIGHT DECK  
SURFACE WARFARE  
CVN 74



## ALMANAC 2019

Surgeon General of the Navy  
Chief, U.S. Navy Bureau of Medicine and Surgery  
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## ON THE COVER



Graphics by Shane Stiefel, lead visual information specialist, BUMED Visual Information and Mass Communication Specialist 1st Class John P. Kotara

# A MESSAGE FROM THE NAVY SURGEON GENERAL

Welcome to the 2019 Navy Medicine Almanac!

It's been an incredible honor to serve as your 38th Navy surgeon general, and lead the more than 63,000 military, civilian, and contract personnel who make up the Navy Medicine team. Throughout this Almanac, we demonstrate why maintaining and building upon Navy Medicine's medical and readiness capabilities is essential to the Navy and Marine Corps missions.

Our Sailors and Marines require a ready medical force to immediately deploy as units that are designed to meet operationally and environmentally unique requirements. To meet these emerging requirements, we are rebalancing our priorities with a greater emphasis on readiness and focusing on the foundation of Navy Medicine, our corpsmen.

Whether they're serving at a medical treatment facility as a surgical technician or an independent duty corpsman in the field with Marines, ensuring our corpsmen are trained and ready for the current warfighting environment is vital to our success. On pages 8 and 18, you can learn more about how we're helping our corpsmen prepare for warfighting environments around the globe.

The men and women who serve are America's most important line of defense, and we honor the trust placed in our hands to provide the best care possible to those who defend our freedom. On page 10, we showcase our embedded mental health program in the Navy and Marine Corps as just one way we are ensuring our Sailors and Marines have access to the services they need to be medically ready for the mission at hand.

Our success is contingent on partnerships with military medical services, civilian health care organizations, government agencies and leading academic and research institutions.



U.S. Navy photo by Mass Communication Specialist First Class John P. Kotara II/Released

These partnerships make us a part of the latest health care innovations on issues like physiological episodes and bacteriophage therapy, both critical to the health and readiness of service members, and ensures we're doing all we can for those entrusted to our care, wherever they serve. You can learn more about these efforts on pages 12 and 16.

It's tradition in our Almanac to highlight Navy Medicine service members past and present who have made an impact. This year, we tell the story on page 22 of a World War II-era Navy dental officer who was posthumously awarded a Silver Star for his heroism during the 1941 attack on Pearl Harbor.

If you'd like to learn more about our history or the future of Navy Medicine and our readiness mission, follow us on our social media platforms, listed on page 23.

I am confident the innovative team we have in Navy Medicine continues to adapt to an ever changing landscape and will lead us into the future. As always, we stand ready to provide the best care our nation can offer to those who serve.

Vice Adm. Forrest Faison,  
U.S. Navy Surgeon General and  
Chief Bureau of Medicine and Surgery

# FROM THE FORCE TO THE FLEET

Navy Medicine is currently placing an even greater emphasis on a medically ready force and a force that is medically ready.

Our Hospital Corps has been aligned to meet this mission, as we have updated our Apprentice "A" school curriculum for corpsmen to better fit the future warfighting environment.

The new curriculum demonstrates to the fleet, patients and the public that every corpsman is qualified to save lives in any and every environment. This curriculum also demonstrates our devotion to increasing the knowledge, skills and abilities of hospital corpsmen.

As the director of the Hospital Corps, I am proud to be a hospital corpsman myself, and to represent the force.

My title may be Force Master Chief, but our hospital corpsmen are truly the force that keeps this organization running.

I hope their dedication is evident as you go through the pages of this Almanac and whenever you meet one of these remarkable Sailors.

Force Master Chief Hosea Smith Jr.,  
Director, Hospital Corps



U.S. Navy photo by Mass Communication Specialist First Class John P. Kotara II/Released

As Navy Medicine's Force Master Chief, I serve as the senior enlisted advisor to the Navy Surgeon General ensuring all enlisted Sailors within Navy Medicine have the training and tools they need in order to best support our warfighters.

I also have the honor to serve as the Director of the Hospital Corps, the Navy's most decorated corps consisting of more than 30,000 active and reserve enlisted Sailors.

Our corpsmen are the heart of Navy Medicine.

They are in our medical treatment facilities, on our waterfronts, flight lines and on the front lines in battlefields, always ensuring our Shipmates and Marines receive the best health care possible; increasing fleet readiness in the ever changing climate of the world.

Few military organizations can look upon their histories with the same degree of pride and awe as the Navy Hospital Corps.

Through 120 years of evolving our capabilities, our level of dedication has never wavered.

# BEING THERE MATTERS

## WHAT WE DO?

Keep Sailors, Marines, and their families healthy, ready and on the job



## U.S. NAVY



Navy Medicine will always be an integral part of the Navy no matter the platform or geographic region. Navy Medicine's mission is to equip naval forces with the medical readiness they need to complete the mission at hand.

## U.S. MARINE CORPS



Keeping Marines healthy and ready to deploy at a moment's notice is what we do because Navy Medicine believes that our Navy and Marine Corps are our nation's first line of defense. Our team works tirelessly to ensure the physical and mental well-being of Marines so they continue to be 'first to fight.'



## EXPEDITIONARY MEDICINE

When Sailors and Marines go forward into harm's way, Navy Medicine is there beside them on, above, below the sea and on the battlefield



## EDUCATION AND TRAINING

Navy Medicine is committed to delivering high-value, high-impact education and training to enhance the professional development and readiness of our health care providers



## WARRIOR CARE

Navy Medicine provides a seamless transition from battlefield, to bedside, to a robust reintegration support system so our warriors can lead productive lives



## RESEARCH AND DEVELOPMENT

Navy Medicine R&D programs enable us to remain agile in the world-class health care we provide to our service members



## GLOBAL HEALTH ENGAGEMENT

Global health partnerships create opportunities to engage with other nations, build long-lasting mutual relationships, and improve the readiness of our Navy and Marine Corps

# FOCUS ON READINESS: INDEPENDENT DUTY CORPSMEN

There are currently more than 1,300 Independent Duty Corpsmen (IDCs) serving in the U.S. Navy.

These corpsmen serve on just about every platform, from ships, submarines and hospitals, Special Forces units, with Marines and everything in between.

IDCs are enlisted health care providers capable of running an entire medical department on their own.

As such, they are the only enlisted profession in the Navy that has been entrusted with this responsibility.

Their training involves a 12-month course, with a mix of classroom and clinical training. This training is in addition to their "A" school and "C" school requirements as hospital corpsmen.

Since IDCs are entrusted with so much responsibility, the emphasis of this training runs the gamut from learning anatomy and physiology, chemical, biological and nuclear medicine (CBRN), tactical combat casualty care, to dive medicine just to name a few.

In addition to the training, IDCs are also certified as basic life support instructors and are registered with National Provider Identification (NPI) numbers, which is a

unique 10-digit identification number issued to health care providers in the United States by the Centers for Medicare and Medicaid Services (CMS).

Training takes place at three different locations depending on the IDC's specialty: The Surface Medical Warfare Institute in San Diego, Calif., the Naval Undersea Medical Institute in Groton, Conn., or Special Forces training in Fort Benning, Ga.

The 2019 goals for the IDC program include developing a clinical rotation program for IDCs in military treatment facilities, inclusion of IDCs in the Joint Centralized Credentials Quality Assurance System and, working with the College of Allied Health Services in reviewing the IDC curriculum to potentially have them become the degree-granting institution for the IDC program.

For those interested in becoming an IDC, you need to have served in the Navy as a hospital corpsman for at least seven years.

You must also spend time performing sick call, and in environmental and occupational medicine. Finally, you need to have exposure to senior leader briefings and apply to IDC School by submitting a "C" school package.



# ANYTIME, ANYWHERE: EMBEDDED MENTAL HEALTH



We all know mental health is important, but what is embedded mental health, and why is it important to our Sailors and Marines?

Embedded Mental Health (EMH) is the way of the future for Navy Medicine.

It directly supports readiness by increasing access to trained mental health specialists.

These specialists provide culturally informed early intervention for combat and operational stress, to prevent psychiatric casualties and help maintain the fighting force.

At a time of continued high operational tempo, our Sailors and Marines deserve no less.

EMH epitomizes Navy Medicine's direct support of the Fleet and Marine Forces.

Mental health providers are assigned directly to a line unit in lieu of being assigned to a Military Treatment Facility (MTF) or clinic as part of the program.

Navy EMH assets include active duty psychiatrists, psychologists, clinical social workers, psychiatric nurse practitioners, and behavioral health technicians.

EMH is consistent with one of Navy Combat and Operational Stress Control (NCOSC) key tenets of placing mental health support as close to the battlefield as possible.

Embedding mental health assets directly within units facilitates increased trust with line commanders and unit members.

These relationships result in a willingness to seek out mental health care early after the onset of combat or operational stress.

By having ready access to mental health care and seeking care earlier, there is an enhanced opportunity to return to duty and maintain the readiness of the fighting force.

EMH assets can be found on aircraft carriers and in submarine forces, fleet surgical teams, at Navy Expeditionary Combat Command, Marine Corps ground combat elements, logistics combat elements and Navy and Marine Corps special operations.

Due to the success of this program, the Navy and Marine Corps have requested 148 new EMH providers to support our warfighters where they are.

As a result of these continued requests, Navy Medicine has initiated a project that aims to develop a comprehensive system outlining the laydown of the EMH program across the Navy and Marine Corps.

The goal of this project is to develop an algorithm that incorporates current medical and non-medical counseling resources, and to produce feasible courses of action for the Navy surgeon general and operational commanders to support future requests.

# RESEARCH AND DEVELOPMENT: BACTERIOPHAGE THERAPY

Bacteriophage, commonly called phage, is a kind of virus that kills targeted bacteria. The most abundant life form on Earth, phages are more than 100 times smaller than bacteria.

Phage therapy is seen as a possible treatment against multi-drug resistant strains of bacteria. There is no one phage to target all bacteria, like a broad range antibiotic can. Phages infect only bacteria, and are not the same as the kinds of viruses that infect people.

For several years, scientists at the Naval Medical Research Center (NMRC) have focused on novel phage-based diagnostics and therapeutics to identify and treat antibiotic resistant infections in traumatic combat injuries. These types of injuries are associated with significant tissue damage and are high risk for complicated infections.

Traditionally, these wounds are treated with surgical debridement and antibiotics. The increasing prevalence of antibiotic resistance has accelerated the need for safe and effective alternative treatment options. Phage therapy is one of the most promising alternatives to antibiotics for the treatment of multi-drug resistant bacterial infections.

There are many elements contributing to phages being such a promising treatment option. First, compared to finding new antibiotics, it's cheaper and easier to find new phages. Though bacteria can become resistant to individual phages just as they can become resistant to individual antibiotics, there will always be new phages in nature that will still work against the bacteria we need to treat.

Second, phages will kill their host bacteria even when the bacteria are antibiotic-resistant. Finally, phages attack only a narrow range of bacteria types, and a good phage therapy will treat infections while not significantly disturbing the healthy bacteria we all live with.

An important part of NMRC's effort is to build a master library of characterized phages, from which subsets (cocktails) could be used to treat specific infections. Researchers collect phages from around the world to make the library as diverse as possible. We currently have roughly 500 phages in our library with 10 to 20 new phages added each month.

The Navy is interested in supporting the development of the phage cocktail technology to the point where it becomes an FDA licensed and available treatment for multiple drug resistance (MDR) infections in combat casualties and other service members.

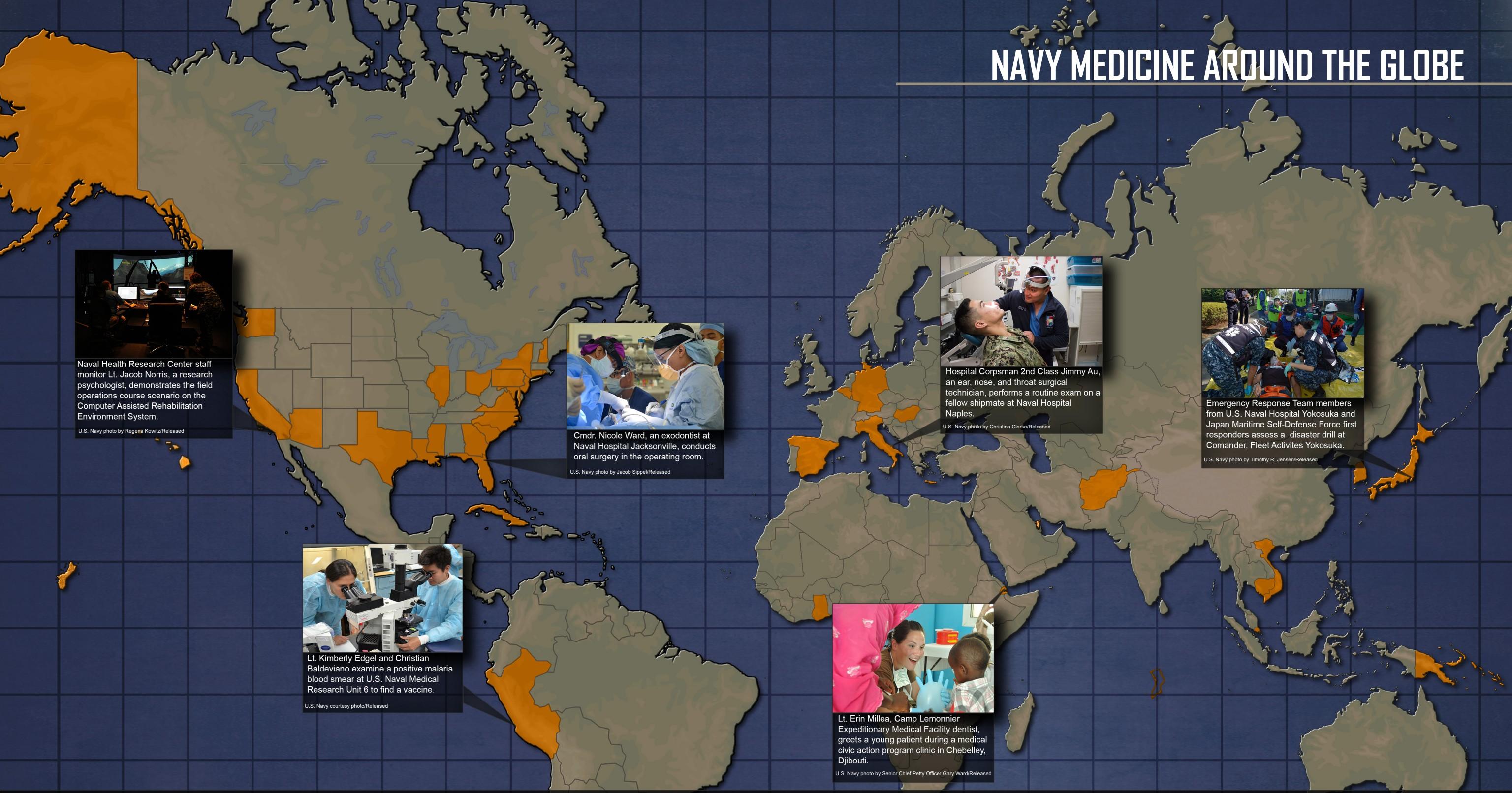
The Navy's future goals for phage research include completion of phase one and two clinical trials, focused on safety, for phage therapeutics. Currently, we're developing phage based diagnostics and detection of live and dead bacteria.

We're also working to complete genome sequencing and bioinformatics analysis of at least 300 phages. Lastly, our goal is to expand the phage research for further development of effective phage vaccines for various infectious diseases like malaria, shigella dengue and similar diseases and, expand phage based diagnostics for field applications.



U.S. Navy photo by Mass Communication Specialist 2nd Class Brianna K. Green/ Released

# NAVY MEDICINE AROUND THE GLOBE



## North America

- Alaska, U.S.
- Arizona, U.S.
- California, U.S.
- Connecticut, U.S.
- Florida, U.S.
- Georgia, U.S.
- Hawaii, U.S.
- Illinois, U.S.
- Louisiana, U.S.
- Maryland, U.S.
- Mississippi, U.S.
- New Hampshire, U.S.
- New Jersey, U.S.
- New York, U.S.
- North Carolina, U.S.
- Ohio, U.S.
- Pennsylvania, U.S.
- Rhode Island, U.S.
- Texas, U.S.
- Virginia, U.S.
- Washington, U.S.
- Washington D.C., U.S.
- Guantanamo Bay, Cuba
- South Carolina, U.S.

## South America

- Peru

## Europe and Africa

- Belgium
- Crete
- Djibouti

## Middle East

- Germany
- Afghanistan
- Ghana
- Bahrain

## Asia-Pacific

- Cambodia
- Diego Garcia

- Guam
- Korea
- Japan
- Papua New Guinea
- Singapore
- Vietnam

\*NOTE: Map is not drawn to scale

# PHYSIOLOGICAL EPISODES



Physiological episodes (PEs) are not a new phenomenon in the aviation community. Since the evolution of the aircraft, PEs have impacted pilot readiness. The recent surge in occurrence and reporting in the military made the phenomenon a top priority not only for Navy Medicine, but for the Department of Defense as a whole. While much remains unknown about the causes, Navy Medicine is making significant strides toward finding a solution.

Identifying signs of an episode, training our aviation community, standardizing care and conducting extensive research has played an important role in Navy Medicine's efforts.

To experience a PE is to experience unpleasant physical effects that impairs one's ability to safely fly an aircraft. Examples of such impairment include, but are not limited to, oxygen deprivation (hypoxia), toxin exposure, decompression injuries, breathing gas problems, spatial disorientation or even loss of consciousness. The extent of these impairments vary from case to case. However, consistency of care is critical when treating an episode.

In an effort to standardize care in the unfortunate event a PE does occur, Navy Medicine developed a set of clinical practice guidelines for flight surgeons to follow when diagnosing and treating a case. These aid in identifying root causes and ensure complete and consistent care for our aviators.

In addition to care standardization, pilots are required to undergo rigorous training to familiarize themselves with the effects of a PE, and ways to avoid an episode.

Protecting aircrew from these types of impairments is a primary focus of research conducted at Naval Medical Research Unit – Dayton (NAMRU-Dayton). Research on barometric pressure changes, effects of variable breathing gas mixtures and effects of breathing resistance on aircrew physiology and performance are just some of the initiatives helping to uncover the mystery of PEs.

Research efforts conclude that both the human and the aircraft present a variety of variables that can potentially contribute to the occurrence and severity of a PE.

Human variables like dehydration, fatigue, insufficient nutrition, illness, airsickness, hyperventilation and stress can cause effects very similar to an aircraft malfunction. Additionally, there is a great deal of human variation from pilot-to-pilot on any given day, making it considerably difficult to identify patterns.

Nevertheless, Navy Medicine implemented several aeromedical efforts to combat this problem and address every aspect of cause, prevention diagnosis and treatment.

In 2018, pilots began using devices called slam sticks in aircraft to monitor pressure fluctuations in the cockpit. Slam sticks are designed to assess and rapidly detect pressurization instability as a possible contributing factor to PEs. They also record cockpit pressure readings to support post flight analysis. Slam sticks have proven to be a relatively inexpensive and valuable tool in mitigating and detecting signs of an occurring or impending episode.

Last year, the number of episodes reported was significantly less than years prior. As Navy Medicine enters the new year, PEs will remain a top priority. Thanks to our specialized teams and Navy Medicine personnel, the Navy is a couple steps closer to solving the mystery of PEs and maintaining pilot readiness.

# HOSPITAL CORPSMAN TRAUMA TRAINING

Hospital Corpsman (HM) Trauma Training is an initiative led by the U.S. Navy Bureau of Medicine and Surgery under the direction of Force Master Chief Hosea Smith, Hospital Corps director, in coordination with Rear Adm. Tina Davidson, commander, Navy Medicine Education, Training and Logistics Command.

This training partnership is between Navy Medicine, the Capt. James A. Lovell Federal Health Care Center (Lovell FHCC), and John A. Stroger Jr. Hospital of Cook County (Cook County) in Chicago.

The training is one of several hospital corps training programs implemented in response to Chief of Naval Operations Adm. John Richardson's competence and character priorities to achieve the best performance through learning.

The first class graduated Jan. 18, 2018, at Lovell FHCC after 12 weeks of classroom and trauma training. The two additional classes since have built on several lessons learned to maximize the educational experience the corpsmen received.

Additional iterations of this hands-on initiative comprised eight days of classroom training and six weeks of trauma training focused on Trauma Resuscitation, Trauma Intensive Care Unit, Burn Unit and the Emergency Department.

To date, three classes of corpsmen have completed this program, totaling 61 students.

The 15 corpsmen from the second iteration received orders to an operational assignment and 30 corpsmen from the first class completed the training are now working in Military Treatment Facilities.

During the training program, students assist trauma surgeons with a range of life-threatening injuries, helping to stabilize the patients.

Active duty senior independent duty corpsmen and civilian providers supervise student work while in the clinical and trauma settings.

The HM Trauma Training program is now a program of record, allowing Navy Medicine to develop additional partnerships for program exportability.

Navy Medicine's target audience will remain first-term corpsmen currently stationed at an MTF, with follow-on orders to an operational assignment.



U.S. Marine Corps photo by Cpl. Ashley Lawson/Released

# A SURGICAL POINT OF VIEW: GLOBAL HEALTH ENGAGEMENT DURING PACIFIC PARTNERSHIP 2018



**Editor's note:** This story was originally posted on the Navy Medicine Live Blog in June of 2018 and written by Cmdr. Katharina Pellegrin, a Hand/Microvascular, Burn and Trauma Surgeon

**USNS Mercy departed from San Diego in February of 2018 in support of the 13th Pacific Partnership mission. More than 800 personnel traveled to Indonesia, Malaysia, Sri Lanka, Vietnam and Japan to strengthen relationships, enhance medical readiness, and advance theater security cooperation initiatives.**

In particular, our Partner Nations (PN) were interested in surgical subspecialties. Aboard USNS Mercy we had experts in: orthopedics, plastics, burns, hands, trauma, pediatrics, urology, ophthalmology, ear, nose and throat, oral and maxillofacial, advanced minimal invasive and robotics surgery, and surgical and gynecological oncology.

These surgical Subject Matter Experts worked cooperatively with PN via close surgical collaborations and exchanges, which enabled us to improve patient's lives around the globe and achieve the PP18 mission of strengthening relationships and interoperability.

The surgical candidates for these collaborative exchanges were identified and pre-screened months in advance of our arrival. A final screening was done just after the ship pulled into port, and surgeries were performed both at PN hospitals and aboard the ship.

Although the ultimate goal of such exchanges is to improve a partner nation's surgical care capability and expertise, the learning and teaching experience truly goes both ways.

**As an example, we were able to learn skills and techniques from our partners to successfully operate in resource-constrained environments.**

An unprecedented highlight of PP18 was having the Da Vinci XI Robot Surgical System on board USNS Mercy. U.S. and partner nation service members and Sri Lankan surgeons conducted the first-ever robot-assisted surgery aboard a maritime vessel on May 4. Our partners experienced firsthand the robot's flexibility as it functioned as first assistants to the surgeon.

In Vietnam, hand and plastic surgeons and dermatologists worked collaboratively on a series of restorative interventions in patients with extensive, severe burn contractures.

After the surgical team performed contracture releases, and in some instances, applied dermal matrix tissue on patients, the dermatologists would work to apply a laser to the remaining scar tissue, thus softening the scars. This type of surgery is very rewarding to the surgeon as we can appreciate the immediate result in the operating theater and during post-operative care when the patient greets us with a smile, amazed at how they have regained functionality and appearance.

This was a great opportunity for me to share my expertise in three different specialties (hands/burns/trauma) with surgeons and ancillary staff internationally. What I enjoyed most was exchanging knowledge with my international colleagues, and gaining a glimpse of insight into the challenges they face in delivering high quality health care on a daily basis. Those countries are now part of my reality, rather than just a dot on the map. I hope I will be able to embed this newly gained knowledge and cultural awareness for my next Navy mission.

# REMEMBERING PEARL HARBOR: LT. CMDR HUGH ROSSMAN ALEXANDER

Editor's note: This is an adaption of a story written by James Marconi, and published by Bureau of Medicine and Surgery public affairs in April 2018.

**By any measure, Lt. Cmdr. Hugh Rossman Alexander served valiantly during the attack on Pearl Harbor Dec. 7, 1941.**

Alexander, the senior dental officer aboard battleship USS Oklahoma, became trapped in a compartment when the ship capsized during the attack. He assisted numerous shipmates in escaping through a narrow porthole, deliberately selecting the most slender men to pass through an opening no more than 14 inches wide.

He sacrificed his life in the process.

Alexander subsequently received the Navy and Marine Corps Medal for his actions, and was posthumously awarded the Purple Heart in 1943 for wounds resulting in his death at Pearl Harbor.

Nearly 77 years later, Alexander's daughter, Gloria Alexander Rogers, accepted a Silver Star Medal posthumously awarded to her father during a ceremony April 2, 2018.

The Silver Star Medal is the United States Armed Forces' third highest personal decoration for valor in combat. Alexander is now the 17th officer in the 105-year history of the U.S. Navy Dental Corps to receive the award.



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